

This listing of claims will replace all prior versions of claims in the application:

Listing of Claims: Please amend the claims as follows:

We claim:

Claim 1. (Currently Amended) A method for detecting an impending seizure in a neural system, comprising:

applying an electrical stimulus consisting of low frequency content to a neural system,

detecting ~~the~~ a first response of the neural system to the stimulus during an interictal state and a second response of the neural system to the stimulus during a state indicative of an impending seizure, and

determining whether ~~the~~ said second response during the state indicative of an impending seizure is different from ~~a~~ said first response during the interictal state, whereby an impending seizure is detected.

Claim 2. (Original) A method of claim 1, wherein said electrical stimulus is subthreshold.

Claim 3. (Original) A method of claim 1, wherein said electrical stimulus is a continuous waveform.

Claim 4. (Original) A method of claim 1, wherein said electrical stimulus comprises an arbitrary waveform that is determined adaptively by the magnitude and frequency of a preceding or concurrent response.

Claim 5. (Currently Amended) A method for detecting an impending seizure in a neural system, comprising:

applying a subthreshold electrical stimulus to a neural system,

detecting ~~the~~ a first response of the neural system to the stimulus during an

interictal state and a second response of the neural system to the stimulus during a state indicative of an impending seizure, and

determining whether the said second response during the state indicative of an impending seizure is different from a said first response during the interictal state, whereby an impending seizure is detected.

Claim 6. (Original) A method of claim 5, wherein said electrical stimulus consists of low frequency content.

Claim 7. (Original) A method of claim 5, wherein said electrical stimulus is a continuous waveform.

Claim 8. (Original) A method of claim 5, wherein said electrical stimulus comprises an arbitrary waveform that is determined adaptively by the magnitude and frequency of a preceding or concurrent response.

Claim 9. (Currently Amended) A method for detecting an impending seizure in a neural system, comprising:

applying an electrical stimulus consisting of a continuous waveform to a neural system,

detecting the a first response of the neural system to the stimulus during an interictal state and a second response of the neural system to the stimulus during a state indicative of an impending seizure, and

determining whether the said second response during the state indicative of an impending seizure is different from a said first response during the interictal state, whereby an impending seizure is detected.

Claim 10. (Original) A method of claim 9, wherein said electrical stimulus consists of low frequency content.

Claim 11. (Original) A method of claim 9, wherein said electrical stimulus is

subthreshold.

Claim 12. (Original) A method of claim 9, wherein said electrical stimulus comprises an arbitrary waveform that is determined adaptively by the magnitude and frequency of a preceding response.

Claim 13. (Currently Amended) A method for detecting an impending seizure in a neural system, comprising:

applying an electrical stimulus to a neural system, wherein said electrical stimulus comprises an arbitrary waveform that is determined adaptively by the magnitude and frequency of a preceding or concurrent response,

detecting ~~the~~ a first response of the neural system to the stimulus during an interictal state and a second response of the neural system to the stimulus during a state indicative of an impending seizure, and

determining whether ~~the~~ said second response during the state indicative of an impending seizure is different from a said first response during the interictal state, whereby an impending seizure is detected.

Claim 14. (Original) A method of claim 13, wherein said electrical stimulus consists of low frequency content.

Claim 15. (Original) A method of claim 13, wherein said electrical stimulus is subthreshold.

Claim 16. (Original) A method of claim 13, wherein said electrical stimulus is a continuous waveform.

Claim 17. (Original) A method of claim 1, wherein the stimulus is characterized by voltage, current, or field strength.

Claim 18. (Original) A method of claim 1, wherein the stimulus is less than 1000

mV/mm.

Claim 19. (Original) A method of claim 1, wherein the stimulus is oriented parallel to the somatic-dendritic axis of the neurons in the neural system.

Claim 20. (Original) A method of claim 1, wherein the stimulus is an electrical field produced using two field electrodes positional external to the neurons in the neural system.

Claim 21. (Original) A method of claim 1, wherein a plurality of stimuli are applied and the interval between each stimulus is more than 1 second.

Claim 22. (Original) A method of claim 1, wherein the detecting the response is measuring neuronal activity of the neural system.

Claim 23. (Original) A method of claim 22, wherein the measuring of the neuronal activity is performed simultaneously and continuously with the applied stimulus.

Claim 24. (Original) A method of claim 22, wherein the neuronal activity is characterized by root-mean-square.

Claim 25. (Original) A method of claim 1, wherein the frequency and amplitude of the applied stimulus is insufficient to evoke action potentials in the neurons that comprise said neural system.

Claim 26. (Original) A method of claim 1, further comprising, when a impending or pre seizure state is detected,

applying an oriented electric field or current to said neural system effective to suppress the seizure activity of the neural system, wherein the magnitude and polarity of said oriented electric field is changed in response to the measured

neuronal activity, and the measuring of neuronal activity is performed simultaneously and continuously with the applied field.

Claim 27. (Currently Amended) A method for detecting a pre-seizure state in a neural system, comprising:

applying a stimulus having a waveform comprising a positive, negative, and zero phases, to a neural system,

detecting the a first response of the neural system to the stimulus during a non-pre-seizure state and a second response of the neural system to the stimulus during a state indicative of pre-seizure, and

determining whether the responses to each of said phases of the stimulus during said state indicative of said pre-seizure differ from responses to each of said phases of the stimulus during said non-pre-seizure state times, whereby a pre-seizure state is detected.

Claim 28. (Currently Amended) A method for detecting a change in the state of a neural system, comprising:

applying a stimulus to a neural system,

detecting the a first and a second response of the neural system to the stimulus, and

determining whether the second response to the stimulus is different from a previous the first response to a stimulus.